



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 7  
25 FUNSTON ROAD  
KANSAS CITY, KANSAS 66115

RECEIVED

APR 18 1989

SUPERFUND BRANCH

April 14, 1989

MEMORANDUM

SUBJECT: Review of Data -- Chemical Commodities, Inc.  
Shawnee, Kansas

FROM: Mark T. Roberts *MT*  
EP&R/SINV

TO: John Bosky  
EMCM/RMON

I. INTRODUCTION

This document provides a summary and discussion of analytical data associated with samples collected by EP&R personnel at the Chemical Commodities, Inc., warehouse facility in Shawnee, Kansas. The referenced sampling activities were performed on December 15, 1989, and were designed to aid in the evaluation of the potential for the off-site release of hazardous substances. With this purpose in mind, sample locations were chosen in order to characterize contaminants present in the soils and sediments along surface drainage pathways leading from the main warehouse and from a pole barn south of the warehouse. Particular emphasis was given to the drainageways in the vicinity of the pole barn. Previous investigators (KDHE) had reported observations of surface water drainage running directly through the pole barn, thus increasing the likelihood of off-site migration of the various chemicals stored within.

II. SAMPLE RESULTS

A total of five surface soil/sediment samples, including one duplicate sample, were collected from drainageways surrounding the pole barn. The samples were representative of materials in the upper two inches of the soil profile and were collected as multiple aliquot (10 aliquots each) samples along sample lines which varied from 40 to 65 feet in length. The sample lines are indicated in the attached figure.

40200989



SUPERFUND RECORDS

SITE: Shawnee/KS Ave.  
ID: KSD980632962  
GROW: 1.3  
OTHER: AR

A summary of the samples and their respective locations is presented in the following table:

Sample No.	Length of Sample Line	Sample Description
PK869001	40 feet	Background sample (onsite): E-W drainageway west of pole barn
PK869002	40 feet	E-W drainageway north of pole barn (onsite)
PK869003	65 feet	N-S drainageway east of pole barn (onsite)
PK869004	55 feet	E-W drainageway on adjacent property east of pole barn (offsite)
PK869004D	55 feet	Duplicate of -004

All samples were submitted to the Region VII EPA Laboratory for the following analyses: pesticides, metals, and anion scan. The table below provides a summary of metals detected in the samples; concentrations are reported in mg/kg (or ppm):

ELEMENT	PK869001	PK869002	PK869003	PK869004	PK869004D
Aluminum	17,000	15,000	23,000	15,000	13,000
Barium	200	320	510	230	260
Beryllium	0.45	0.57	0.80	0.44	0.39
Cobalt	8.9	16	20	11	11
Chromium	17	140	430	59	67
Copper	17	77	130	39	36
Iron	23,000	32,000	34,000	22,000	23,000
Manganese	670	1600	3,000	1,400	1,900
Molybdenum	11	11	14	10	9.5
Nickel	21	25	32	43	49
Lead	ND	49	75	ND	ND
Antimony	ND	ND	87	87	56
Vanadium	41	40	49	35	36
Zinc	68	510	870	310	310
Calcium	5,500	31,000	58,000	66,000	64,000
Magnesium	2,800	2,600	4,000	2,700	2,500
Sodium	710	2,100	5,100	5,300	5,400
Potassium	2,700	2,100	3,300	2,100	1,900

In keeping with the purpose of the sampling effort (i.e., evaluation of the potential for an off-site release), the data above can be initially examined for elements which are reported at significantly higher concentrations at locations downgradient of suspected sources relative to background concentrations. One rule-of-thumb that has been applied to site evaluations defines "significant" as three times the background value, or three times the detection limit if an element or compound is not detected in the background sample. Using this criterium, the following elements were found in significantly higher concentrations in soils and/or sediments downgradient of the warehouse and pole

barn: chromium, copper, manganese, lead, antimony, zinc, calcium, and sodium. Of these, chromium, antimony, zinc, calcium, and sodium remain at significant levels in the two off-site samples. In order to further evaluate the significance of the reported concentrations of these five elements, the following table is provided. Mean ambient background concentrations as encountered in the soils of the western United States are listed for each of the elements as are the range of ambient concentrations encountered. Concentrations are reported in ppm. (Ref: Background Geochemistry of Some Rocks, Soils, Plants, and Vegetables in the Conterminous United States, Jon J. Connor and Hansford T. Shacklette, U.S. Geological Survey Publication, 1975)

Element	Mean Ambient Bkg. Concentration	Range of Concentrations
Antimony	<150	<150 - 500
Calcium	18,000	100 - 400,000
Chromium	38	3 - 1,500
Sodium	10,000	500 - 100,000
Zinc	51	<10 - 2,000

A comparison of the detected concentrations with the values above reveals that the chromium, zinc, and calcium concentrations in the off-site samples exceed the mean ambient concentrations; however, all three elements fall well within the range of observed ambient concentrations. Of the elements detected, only chromium may warrant further investigative attention. A concentration of 10 ppm chromium has been assessed to present a health risk comparable to that associated with 1 ppb 2,3,7,8-TCDD in residential soils. Chromium levels in the on-site soils were up to 43 times this value; those in the off-site samples were 6 to 7 times higher. The significance of these levels is tempered by the fact that the site setting is predominantly rural, not residential. The chromium concentrations, if deemed significant, can be circumstantially traced to products stored in the pole barn. Several items listed in an inventory of stored chemicals produced during a RCRA inspection of the facility contained chromium as a component.

In addition to the metals reported above, two pesticides were detected in downgradient samples at elevated concentrations relative to background concentrations. The pesticides, dieldrin and endrin, are listed below with their respective concentrations in ug/kg (or ppb).

COMPOUND	PK869001	PK869002	PK869003	PK869004	PK869004D
Dieldrin	ND	23.0	280	710	520
Endrin	ND	ND	ND	10.0	7.7

The data appears to indicate a significant downgradient increase in the concentrations of dieldrin and endrin, including those encountered in the offsite samples. However, the

inventories of record listing chemicals stored in the warehouse and pole barn do not include either of the pesticides; thus, an identification of their source cannot be made with any certainty at this time. Further, a carcinogenic risk comparable to that of 1 ppb 2,3,7,8-TCDD in residential soils is listed as 10 ppm for dieldrin (compared to levels in the ppb range listed above). No comparable risk levels are available for endrin. In summary, additional investigative work may provide a basis for the documentation of a source-specific release of pesticide compounds; the significance of such documentation when examined according to the risks involved may be negligible.

### III. FUTURE ACTION

If additional investigative efforts are expended at this site with the intent of evaluating the nature and extent of offsite contaminant migration, the following items should be considered for inclusion in the scope of work:

A. The fate of discharge components which exit the warehouse via trench-type floor drains should be identified. Once the discharge area is identified (e.g., septic field, sewer), an evaluation of the need for sampling can be made.

B. The identity of unlabeled materials which remain in storage, particularly those in the pole barn, should be established; this activity is necessary to the completion of the site inventory and, possibly, to the identification of the sources of contaminants outside the storage facilities.

C. Some subsurface exploration may be warranted in evaluating the potential for off-site migration via groundwater. Investigative reports filed by the KDHE in the late 1970's and early 1980's referred to leaking chemical drums stored in the parking lot south of the warehouse. Following the removal of the leaking drums, the lot was covered with an unspecified depth of fill material. File material does not indicate that sampling was performed to characterize the extent and nature of soil contamination.

Attachment

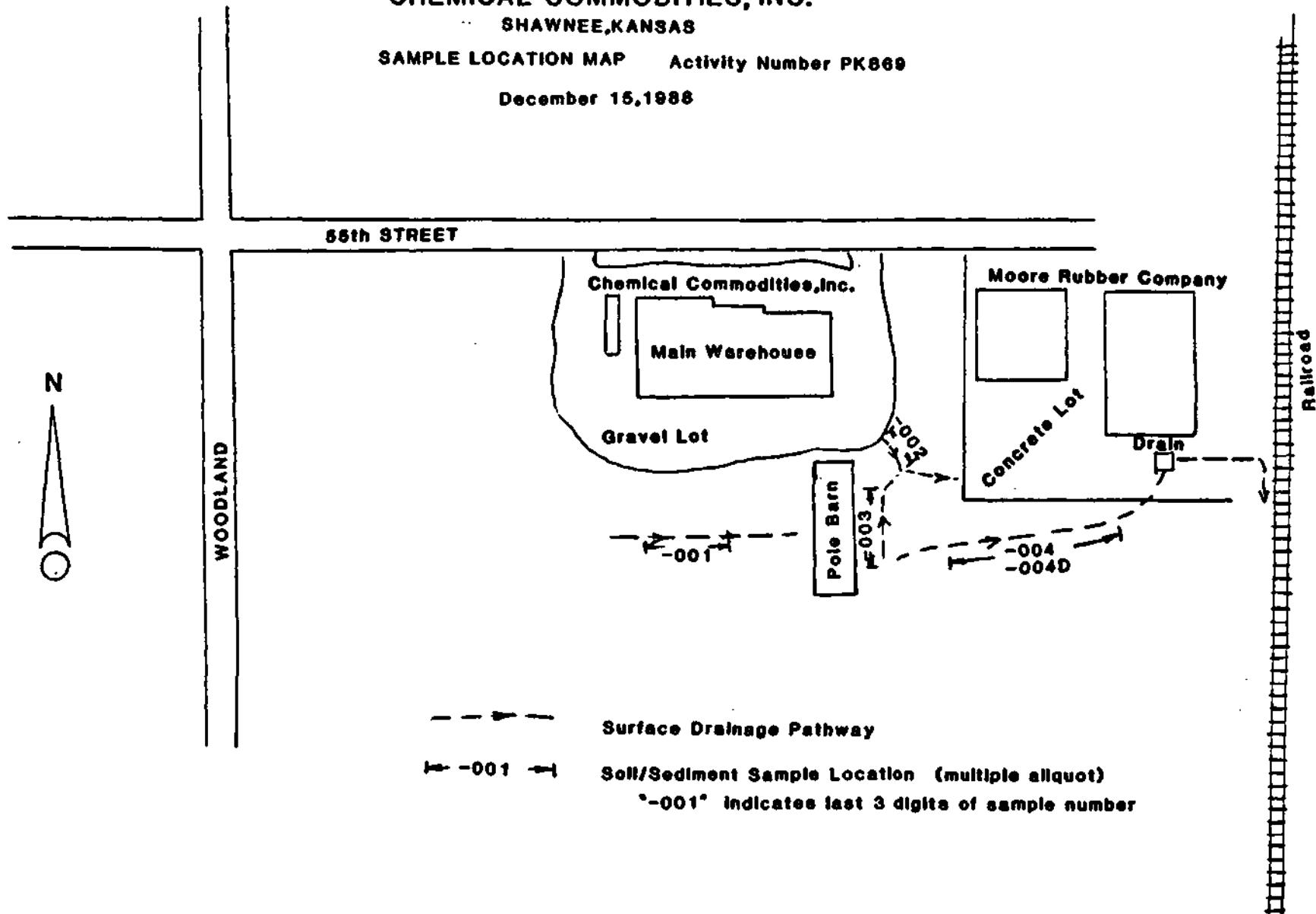
cc: ✓ Mike Sanderson, SPFD  
Robert Morby, RCRA  
Martha Steincamp, CNSL

# CHEMICAL COMMODITIES, INC.

SHAWNEE, KANSAS

SAMPLE LOCATION MAP Activity Number PK869

December 15, 1988



Not to Scale